Amendments to the Claims

1-9 (withdrawn)

10. (original) In a process for progressively reducing a thickness of a thin-film layer on a surface of a substrate, a method for detecting a process endpoint representing a minimum desired thickness of the thin-film layer, the method comprising:

(a) directing a probe light onto a region of a surface of the thin-film layer to produce a signal light propagating from the thin-film layer;

(b) detecting the signal light;

(c) measuring a spectral characteristic of the signal light from the detected signal light to produce a spectral-characteristic signal;

(d) calculating a cross-correlation function of the spectral-characteristic signal with a predetermined reference spectral-characteristic signal, the cross-correlation function exhibiting a change with a corresponding change in the thickness of the thin-film layer; and

(e) from the cross-correlation function, determining the process endpoint.

11. (withdrawn)

12. (canceled)

13. (currently amended) The method of claim ~~12~~23, wherein the parameter is selected from the group consisting of a difference between a largest local maximum of the signal waveform and a smallest local minimum of the signal waveform.

14. (currently amended) The method of claim ~~12~~23, wherein the parameter is the smallest local minimum of the signal waveform.

15. (currently amended) The method of claim ~~12~~23, wherein the parameter is a quotient of the smallest local minimum of the signal waveform to the largest local maximum of the signal waveform.

16. (currently amended) The method of claim ~~12~~23, wherein the parameter is an average of the signal waveform.

17. (currently amended) The method of claim ~~12~~23, further comprising the steps of:

providing a reference value of the parameter corresponding to a reference thickness of the thin-film layer;

comparing the thickness determined in step ~~(d)~~(e) with the reference value to obtain a comparison value; and

calculating, from the comparison value, a process endpoint at which to cease reducing the thickness of the thin-film layer.

18. (currently amended) The method of claim ~~12~~23, further comprising the step of specifying on the thin-film layer a measurement position that includes the location, wherein step (a) is performed at the measurement position.

19. (currently amended) The method of claim 18, further comprising the steps of:

providing a reference value of the parameter corresponding to a reference thickness of the thin-film layer at the measurement position;

comparing the thickness determined in step ~~(d)~~(e) with the reference value to obtain a comparison value; and

calculating, from the comparison value, a process endpoint at which to cease reducing the thickness of the thin-film layer.

20. (currently amended) The method of claim 18, further comprising the steps of:

providing a reference value of the parameter corresponding to a reference thickness of the thin-film layer at the measurement position;

comparing the thickness determined in step ~~(d)~~(e) with the reference value to determine an actual thickness of the thin-film layer at the measurement position; and

calculating, from the actual thickness, a process endpoint at which to cease reducing the thickness of the thin-film layer.

21. (currently amended) The method of claim ~~12~~23, further comprising the steps of:

obtaining an optical signal from a desired measurement position on the surface of the workpiece;

calculating a thickness of the thin-film layer; and

comparing the calculated thickness with a reference thickness at the measurement position so as to determine a process endpoint at which to cease reducing the thickness of the thin-film layer.

22. (currently amended) The method of claim ~~12~~23, wherein the workpiece is a semiconductor wafer and the thin-film layer is either a metal layer or an insulating layer on the surface of the wafer.

23. (original) In a process for reducing a thickness of a thin-film layer on an integrated circuit device formed on a surface of a semiconductor wafer, a method for detecting the thickness of the thin-film layer, comprising:

(a) directing a probe light to a location on the thin-film layer so as to produce a signal light propagating from the location, the signal light produced by either reflection of probe light from the thin-film layer or transmission of probe light through the thin-film layer;

(b) removing all orders of diffracted light from the signal light except a zeroth order of diffracted light;

(c) producing a signal waveform from the zeroth-order signal light;

(d) calculating a value of a parameter of the signal waveform; and

(e) from the value obtained in step (d), calculating a thickness of the thin-film layer.

24. (original) The method of claim 23, wherein step (b) is performed by passing the signal light from the location through an aperture defined by an aperture plate, the aperture plate being configured and situated so as to block higher orders of diffracted light in the signal light.

25. (original) The method of claim 24, including the step of varying a size of the aperture so as to cause the aperture to pass only the zeroth order of signal light.

26. (original) The method of claim 23, wherein step (b) is performed by providing a two-dimensionally distributed measurement of a spot pattern of the signal light while blocking the higher orders of signal light.

27–40 (withdrawn)